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Memorandum

To: **LaDonna Turner, Site Assessment Manager**
Technical and Enforcement Branch
U.S. Environmental Protection Agency, Region 6

From: **Dana Bahar, Manager, Superfund Oversight Section**
Ground Water Quality Bureau, New Mexico Environment Department

Date: **October 8, 2010**

Subject: **Pre-CERCLIS Screening Assessment of the Section 12 Mine (Grants Mining District), McKinley County, New Mexico: Further action under CERCLA recommended**

Site name	Section 12	**Alternative names**	Dysart Group, Tana and Alto		
Street address	not applicable	**City**	not applicable	**State**	New Mexico
Zip code	not applicable		**County**	McKinley	
Latitude	35.45263	**Longitude**	-107.87289	**TRS**	T14N, R10W, Sec. 12 SW/SE

Site physical description:
The Section 12 Mine ("Site") is located approximately 8.5 miles northwest of the junction of State highways 509 and 605 (Ref. 1). The Site is located in the Ambrosia Lake 7.5 minute USGS 1:24000 scale topographic map quadrangle at latitude 35.45263, longitude 107.87289, and elevation approximately 7,080 ft above sea level. The total area of the Site is estimated to be 47 acres, but the area visibly disturbed from activities is approximately 10 or more acres (Ref. 2).

Access to the Site is required by permission from the mineral rights permitee, Mr. George Lotspeich, president of Southwest Resources, Inc. of Albuquerque, New Mexico. Figure 1 is a location map and Figure 2 is a site features map. Figures 1 and 2 are contained in Attachment A.

The Section 12 Mine is located approximately 7,000 ft east of the Dysart Mine No. 1 site along the northern side of the ephemeral drainage named Martin Draw (Ref. 3 and Ref. 1). Martin Draw extends southeastward to join Arroyo del Puerto near the northwest end of the Rio Algom Mill Site. The Arroyo del Puerto continues southeastward until it joins San Mateo Creek below the Highway 509-605 junction. Section 12 Mine is located directly adjacent to the original Ambrosia Lake surface water body for which the area and topographic map are named. The presence and size of the lake varies depending on precipitation and time of year.

There is a 30-foot high hoist frame structure with a large sheet metal hopper above the sealed mine shaft. The mine shaft is covered with wooden timbers and concrete sections. The hoist control shack is also present. The one story mine office building is located to the northeast of the shaft, and it is approximately 100 feet (ft) long X 40 ft wide. An equipment yard is located on the north side of the office building that is approximately 177 ft long X 177 ft wide. A shop building is located south of the main shaft and it is approximately 80 ft long X 20 ft wide. No pits or open cuts were found at the Site. The area contains noticeable waste rock piles that are over 100 feet long and several feet high. Photographs 1-6 from July 29, 2010 site visit are contained in Attachment B. Currently, underground access to the Section 12 mine is through the Section 11 (Dysart #2) mine shaft which is an air shaft for Section 12. Another air shaft structure and pipe is located approximately 400 ft NNW of the main shaft. There are two other vent shafts on the property. The Section 12 main shaft is approximately 700 ft deep.

Site identification:
The Site is one of numerous legacy uranium sites within the Grants Mining District, Ambrosia Lake Subdistrict, San Mateo Creek watershed, Bluewater Underground Basin.

Site summary:
Information on the current site physical description is limited and summarized from a brief site reconnaissance visit on July 29, 2010 conducted as part of a New Mexico Energy, Minerals and Natural Resource Department, Mining and Minerals Division (MMD) Mining Act Reclamation Program permit application inspection. NMED accompanied current mineral rights permitee, George Lotspeich; and representatives from MMD and Neutron Energy, a uranium mining company, to the Site. A Ludlum model 14C ratemeter and Ludlum model 44-2 gamma scintillator were used to record readings of radioactivity at the Site. The model 44-2 is a very sensitive probe that reads in counts per minute (cpm). The readings were uncollimated (non-shielded) so the readings represent radioactivity striking the detector from more than one preferred angle which would be perpendicular to the detector face.

Background readings for the Section 12 area are generally less than 5,000 cpm and more commonly about 3,000 cpm. The gamma readings for the Site ranged from a low of 7,000 cpm (40 µR/hr) at the surface of the concrete side walk on the west side of the office building to a high of 100,000 cpm (571 µR/hr) at the surface and 80,000 cpm (456 µR/hr) at 4 ft over by some waste rock on the east side of the north trending main access road. Waste rock piles averaged about 40,000 cpm (228 µR/hr).

Targets:
The Site is located directly adjacent to the east side of the Martin Draw channel (Ref. 1). Martin Draw eventually joins the Arroyo del Puerto. Distance to the Site from the end of Highway 509 is approximately 1.5 miles. A standing body of shallow water approximately 4 acres in size and located adjacent to the northwest side of the main shaft is believed to be from recent precipitation-surface runoff. This standing body of water is also the feature known as “Ambrosia Lake” (Ref. 1). The Site has the potential to supply surface sediment or soil to Martin Draw and Arroyo del Puerto during high precipitation runoff events. Arroyo del Puerto eventually joins San Mateo Creek south of the Highway 509-605 junction. The Site is accessible by range cattle and animals, but human trespassers and inadvertent intruders would have to pass through or over locked gates to get on the Site. The hoist frame structure and various pieces of equipment could present physical hazards to humans.

Well records for the New Mexico Office of the State engineer that are located within a four-mile radius of the Site are show in Table 1 (Ref. 4).

Table 1. Well records from the New Mexico Office of the State Engineer located within a 0 – 4 mile distance ring from the Section 12 Mine Site, Grants Mining District, New Mexico.

Distance ring from site (miles)	POD REC NB	POD BASIN	POD NBR	well completion date	depth of well (ft)	depth to water (ft)	well casing size (in)	owner name	USE	diversion acre/ft yr
0 - 0.25										
0.25 - 0.50										
0.50 - 0.75										
0.75 - 1.0										
1.0 - 2.0	785	Bluewater	00366	12/31/1955	760.00	0.00	4.50	RIO ALGOM MINING LLC	Mining	0
1.0 - 2.0	1490	Bluewater	00372	9/12/1956	796.00	0.00	8.63	SABRE-PINON CORPORATION	Mining	0
1.0 - 2.0	1428	Bluewater	00994	4/5/1959	1094.00	0.00	0.00	RIO ALGOM MINING LLC	Mining	5227
2.0 - 3.0	522	Bluewater	00143	7/18/1960	90.00	60.00	0.00	ANDREWS	Domestic	3
2.0 - 3.0	620	Bluewater	00362	11/30/1956	3093.00	0.00	10.75	RIO ALGOM MINING LLC	Mining	0
2.0 - 3.0	29	Bluewater	00363	4/30/1956	745.00	0.00	4.50	RIO ALGOM MINING LLC	Mining	0
2.0 - 3.0	97	Bluewater	00364	8/31/1956	735.00	0.00	6.00	ANDERSON DEVELOPMENT CORP.	Mining	0
2.0 - 3.0	851	Bluewater	00365	1/31/1956	793.00	0.00	6.63	ANDERSON DEVELOPMENT CORP.	Mining	0
2.0 - 3.0	183001	Bluewater	00371	8/25/1956	752.00	0.00	8.63	SABRE-PINON CORPORATION	Mining	0
2.0 - 3.0	354	Bluewater	00373	12/31/1956	1003.00	0.00	13.38	RIO ALGOM MINING LLC	Mining	0
2.0 - 3.0	1285	Bluewater	00522	2/7/1978	70.00	0.00	0.00	UNITED NUCLEAR-HOMESTAKE PTNRS	Monitoring Point	0
2.0 - 3.0	180648	Bluewater	00522	2/7/1978	70.00	0.00	5.00	UNITED NUCLEAR-HOMESTAKE PTNRS	Monitoring Point	0
2.0 - 3.0	532	Bluewater	00994	9/18/1958	857.00	0.00	0.00	RIO ALGOM MINING LLC	Mining	5227
2.0 - 3.0	378	Bluewater	00994	3/23/1968	810.00	0.00	0.00	RIO ALGOM MINING LLC	Mining	5227
2.0 - 3.0	1170	Bluewater	00994	6/8/1958	750.00	0.00	0.00	RIO ALGOM MINING LLC	Mining	5227
2.0 - 3.0	823	Bluewater	00994	3/16/1970	779.00	0.00	0.00	RIO ALGOM MINING LLC	Mining	5227
2.0 - 3.0	1225	Bluewater	00994	1/2/1958	827.00	0.00	0.00	RIO ALGOM MINING LLC	Mining	5227
3.0 - 4.0	188190	Bluewater	00481	3/22/1984	28.00	4.00	4.00	KERR-MCGEE CORPORATION		0
3.0 - 4.0	849	Bluewater	00539		0.00	0.00	0.00	N.M. STATE HIGHWAY DEPT.	Public	0
3.0 - 4.0	695	Bluewater	00680		0.00	0.00	0.00	STAR LAKE RAILROAD CO.	Construction	0
3.0 - 4.0	1167	Bluewater	01087	5/25/1985	651.00	566.00	5.00	ALBERS BROTHERS	Stock	3
3.0 - 4.0	186606	Bluewater	01145		0.00	0.00	0.00	N.M. STATE HIGHWAY DEPARTMENT	Highway	0
3.0 - 4.0	436	Bluewater	01246	4/29/1982	1200.00	700.00	6.63	ELKINS	Stock	3
	POD REC NBR: point of diversion record number.									
	POD BASIN: point of diversion basin									
	POD NBR: point of diversion number									

Site ownership and Potential Responsible Parties:
The history of site ownership and potentially responsible parties for the Site includes the following. In 1961 Anderson Development Company, of Albuquerque, operated the Site. From 1962 to 1963 Stella Dysart, of Albuquerque, owned and operated the Site. In early 1977 Hydro Nuclear Corporation operated the Site. From July 1977 to July 1978 Cobb Nuclear Corporation, of Albuquerque, owned the site and subcontracted operations to Nuclear Power and Energy, of Grants. Cobb Nuclear operated the site from August 1977 to August 1979. From August 1979 to April 1980 Cobb Nuclear contracted with Koppen Mining and Construction Corporation, of Albuquerque, to operate the site. In 1980 United Nuclear Corporation also operated the Site. Cobb Nuclear operated the site from April 1980 to August 1981. From late 1981 to 1983 Cobb Resources Corporation, of Albuquerque, operated the site. There was no mineral production in 1983. Southwest Resources, Inc. submitted a mine permit application to the New Mexico Energy, Minerals, and Natural Resources Department, Mining and Minerals Division for the Site. Neutron Energy is interested in the Site as of summer 2010. The Bureau of Land Management is the surface land manager for the Site. Southwest Resources, Inc. is listed as the owner of mineral rights (Ref. 5 and 6).

File review:
Files and information sources that were reviewed for this assessment are listed below.

Site reconnaissance:
An abbreviated Abandoned Uranium Mine (AUM) site assessment and Mining Act pre-permitting inspection was conducted by the Mining and Minerals Division on July 29, 2010.

Recommendation:
Additional investigation of the Site under CERCLA authority is recommended to assess any physical hazards as well as the areal extent of elevated radioactivity readings noted in the most recent Site reconnaissance to determine if threats to human health and the environment exist. NMED also recommends assessment of sediments in surface water drainages originating or crossing this Site to evaluate the potential occurrence of impacts from dispersal of waste materials that have been left on-Site.

Currently, the existence of regional impacts from legacy uranium sites to the ground water system has not been determined. Ground water impacts from “dry” mines such as this Site initially would impact the alluvial ground water system through leaching of on-site waste materials and ore stockpiles. Such impacts, if they exist, predominantly may be localized to alluvial ground water in the vicinity of the Site from leaching prior to Site reclamation. Alternatively ground water impacts may be more widespread, contributing to the overall potential degradation of the alluvial ground water regionally, as well as potentially to impacts to ground water in underlying bedrock aquifers. A generalized investigation of potential alluvial ground water impacts from “dry” former uranium mines within the Grants Mining District is recommended as part of regional ground water quality characterization. Depending upon the results of this investigation, additional site-specific alluvial ground water characterization might be considered.

References:
1. USGS, 1957. Ambrosia Lake, N, Mex. 7.5 minute quadrangle topographic map, 1:24,000 scale.
2. Natural Resource Conservation Service, Web Soil Survey website: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed 8/10/2010.
3. New Mexico Environment Department, GWQB, SOS, Memorandum-Draft 8/4/2010 to LaDonna Turner EPA Region 6: Pre-CERCLIS Screening Assessment of the Dysart #2 mine, 8 pp.
4. New Mexico Office of the State Engineer. “May_06_wells.” Shapefile.
5. New Mexico Energy, Mineral and Natural Resources Department, undated. “2007-07-20 to NMED-GWQ-Sfund.xls.” Spreadsheet excerpt.
USGS, 1957. Ambrosia Lake
6. McLemore, Virginia T. and William L. Chenoweth, revised December 1991. “Uranium mines and deposits in the Grants district, Cibola and McKinley counties, New Mexico.” New Mexico Bureau of Mines and Mineral Resources Open-file report 353.

Attachment A

Figures 1 and 2

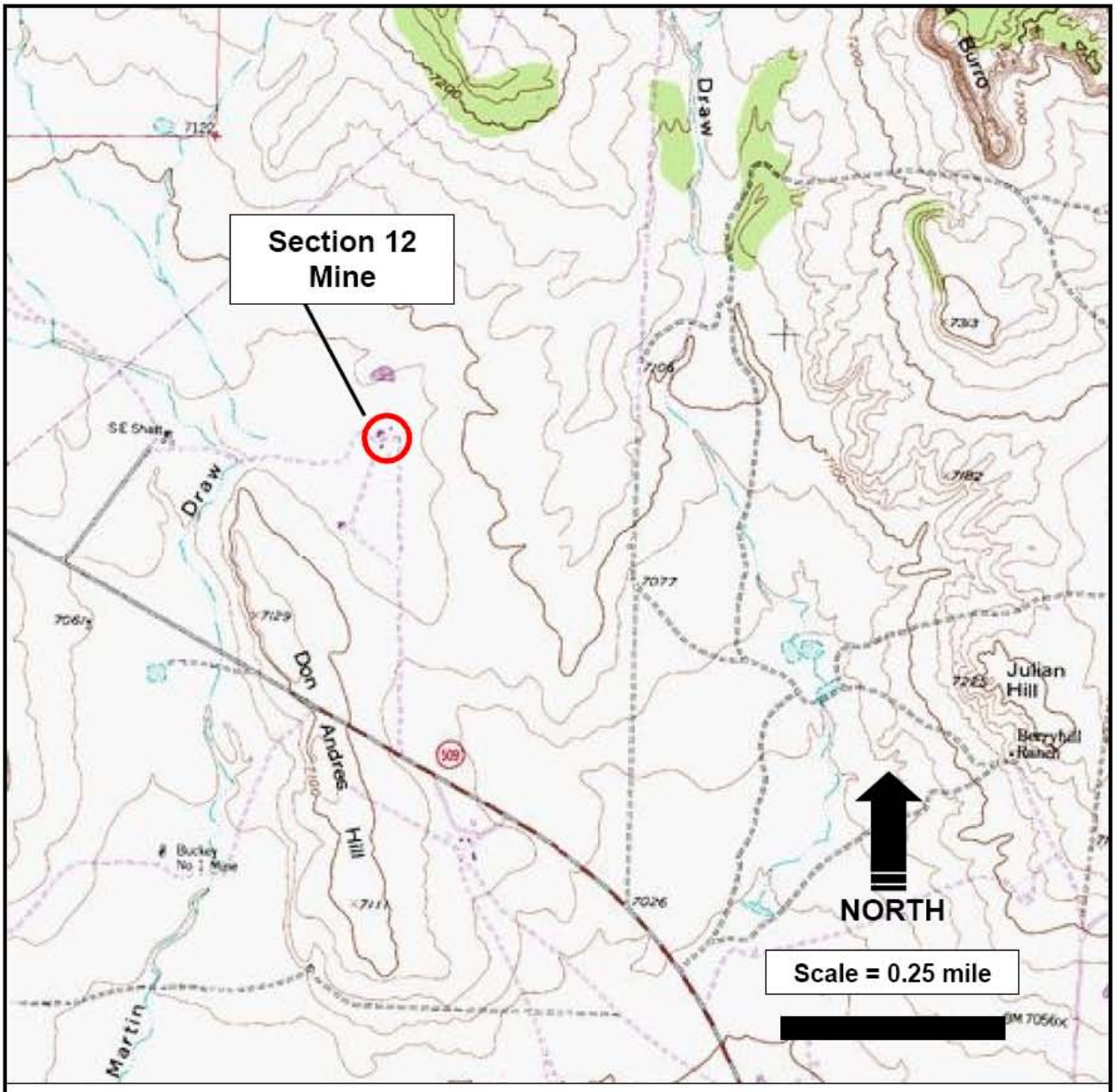


Figure 1. TopoQuest.com location map of the Section 12 Mine in the Ambrosia Lake Quadrangle USGS 7.5 topographic map, T14N, R10W, Sec 12, Ambrosia Lake Subdistrict, Grants, NM.

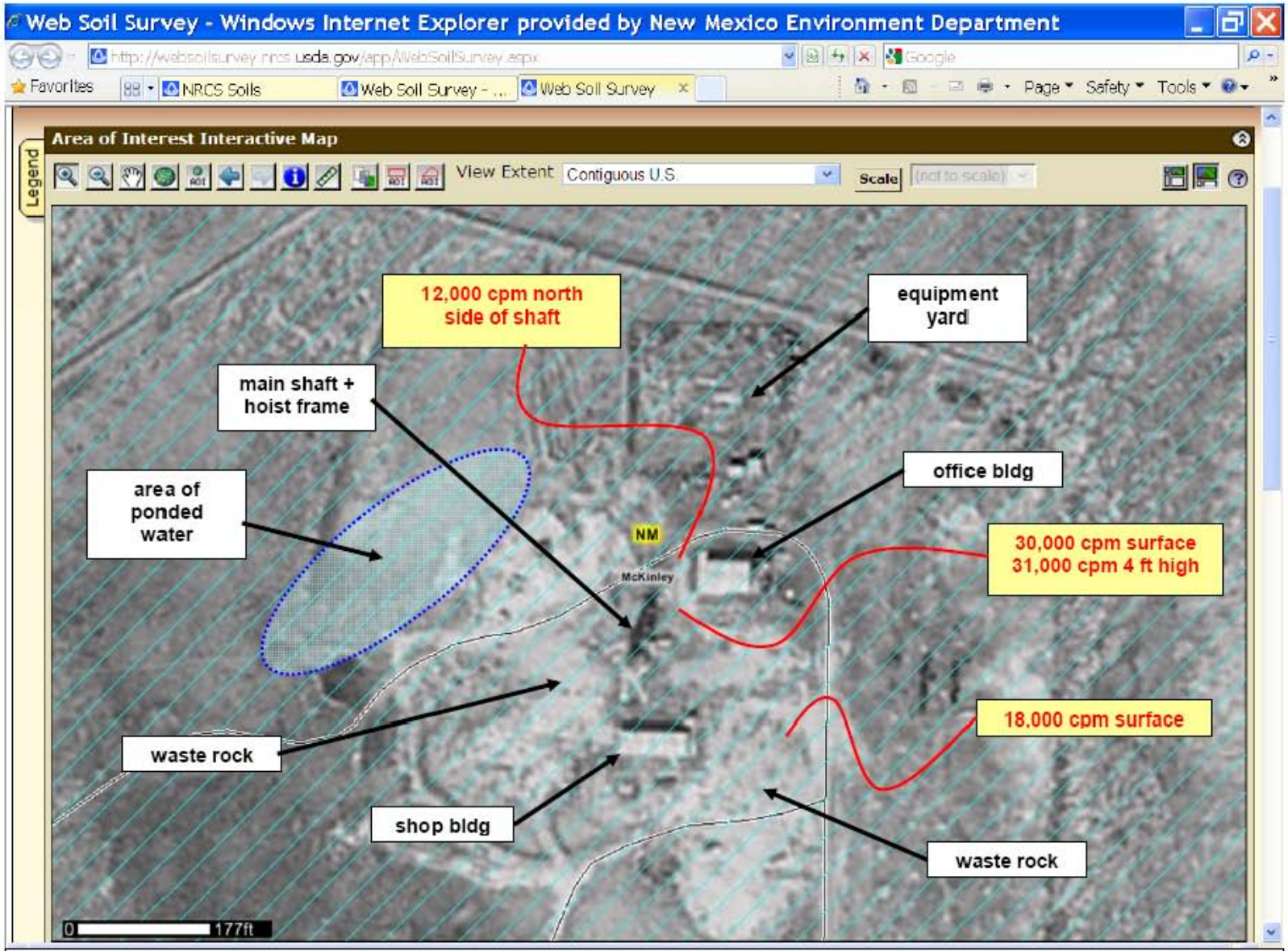


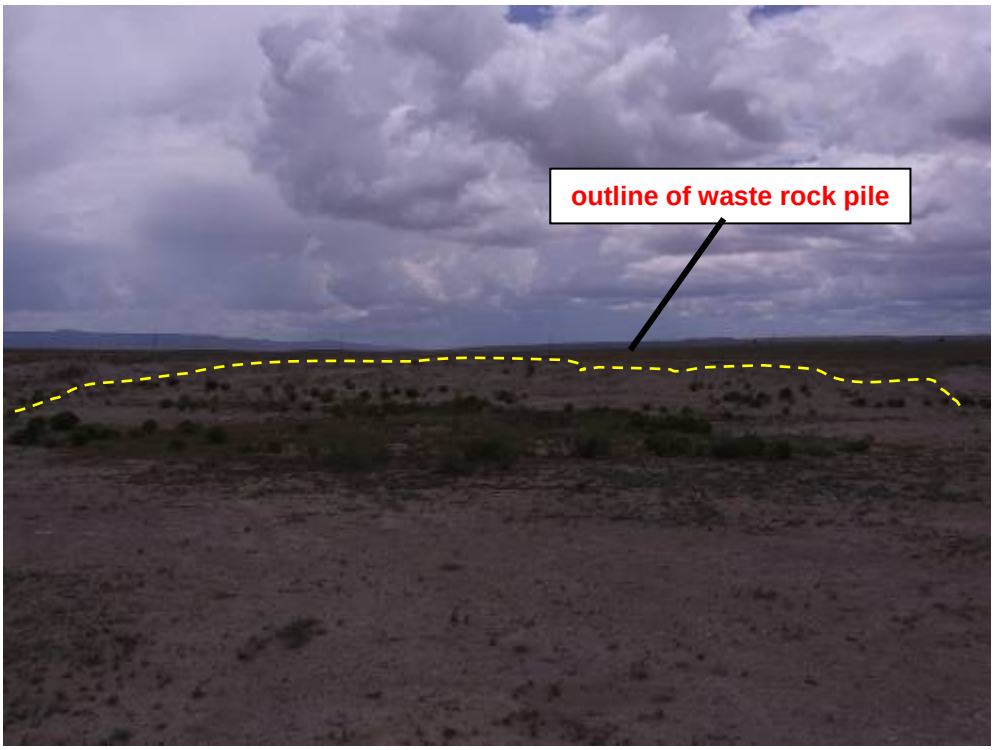
Figure 2. Aerial photographic map (10/9/97) of the Section 12 Mine Site and features observed on the 7/29/2010 field reconnaissance visit, Ambrosia Lake Subdistrict, New Mexico from the Natural Resource Conservation Service website for soil survey information; http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed 8/10/2010.

Attachment B

Photo Log from July 29, 2010

Photographs Section 12 Mine: No. 1, main shaft and hoist structure (view from east looking west) and No. 2, main shaft with lower part of hoist visible (view from north looking south).

Photographs Section 12 Mine: No. 3, office building (view from waste pile looking east) and No. 4, shop building (view looking south).



Photographs of Section 12 Mine: No. 5, ponded surface water on west side of Site (aka Ambrosia Lake) and No. 6, waste rock pile on south side of Site.